Management of Cancer of the Nasal Cavity and Paranasal Sinuses

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SUMMARY

Cancer involving the antrum can be cured in a greater percentage of cases if the lesions are detected earlier, specifically diagnosed histologically, and radically managed at the time of the initial treatment. The procedure of choice is, first, surgical removal (with a scalpel) of as much of the tumor as is possible without risk of operative death, then limited but specific cancerocidal radiation as indicated by operative findings or regular postoperative observation. The period of convalescence will be less distressing and shorter with this procedure than with others; and, in those cases in which cure is not effected, palliation will be more satisfactory. The cured patients are cosmetically acceptable without functional disability except for unilateral loss of vision in cases in which exenteration of the orbit is necessary.

CANCER of the nasal cavity and paranasal sinuses makes up about 0.2 per cent of all malignant tumors. Eighty per cent of these lesions arise in the maxillary antrum. However, this is usually difficult to prove because by the time the patient is first observed the extent of the involvement masks the point of origin in a majority of the cases. This is of only academic importance, as the management of these primary lesions is dependent upon their extent rather than the site of origin. On the other hand, the fact that definitive treatment often is not begun until the growth is extensive makes for end-results which are much poorer than they need be. In this regard it is particularly noteworthy that in the great majority of cases death is caused by local complications and sequelae rather than by distant metastases. In addition, the increased morbidity occasioned by delay results in excruciating local pain, sepsis, and bleeding and foul-smelling ulcerated lesions which make social outcasts of the sufferers. According to reports of observations at autopsy, distant metastasis occurs in not over 25 per cent of cases; in the other 75 per cent, presumably, death is caused by the local effects of the lesion.

REPORTED END-RESULTS

A contributing factor in the deaths from such local lesions is omitting to apply the best treatment, adequately, when the patient is first observed. This omission is owing either to undue pessimism or to lack of knowledge regarding the efficacy of the therapeutic measures available. Too often, this frame of mind is influenced by publications of statistical end-results, based on a selected group of cases, "proving" the effectiveness of a special form of treatment or indicating that trying to cure the patients by any form of therapy is hopeless. For example, Tod[3] in 1948 analyzed a group of 100 patients, treated by the insertion of radium within the substance of the antral cancer, with five-year arrest in 26 per cent of cases. It was claimed, therefore, that this was the method of choice in the treatment of these lesions. Yet, in a critical analysis of the body of the article in which this conclusion was reached, it was noted that for the entire series of 222 patients reported upon by Tod, who were treated by all methods, the five-year salvage rate was 25 per cent. Windeyer[4] of Middlesex Hospital, London, reported in 1948 that in cases in which radium alone was used, the five-year arrest rate was 18.8 per cent. In a later group treated by a combination of primary external x-irradiation, followed by limited electrosurgical excision of the palate, for both drainage and removal of residual necrotic tissue or tumor, together with subsequent intracavitary insertion of radium (if indicated), the five-year arrest rate was 25 per cent. The treatment period covered four to six months with continued discharge of necrotic material and sequestration of the thermal-coagulated and radiated tissues for at least another three to six months. The patients had pain, foul-smelling discharge and hemorrhages and were greatly dependent on professional assistance during this long period of treatment. Del Regato[2] reported a series of ten patients treated by x-irradiation alone with 40 per cent five-year salvage. Berven,[1] of Stockholm, reported only 6 per cent five-year salvage in a group of 222 patients similarly treated. As both investigators are competent radiologists, it may be assumed that the pronounced disparity in the reported results is ascribable to the manner in which each selected cases for treatment, and to the manner of subsequent analyses. Wille[5] of the Norwegian Radium Hospital of Oslo reported on 220 cases. The highest five-year salvage rate, 18.1 per cent, was in a group of patients treated by radical operation and intensive postoperative irradiation. The poorest result was five-year arrest of the lesion in 6.3 per cent of 95 patients treated by radiation alone.

In further study of the reports mentioned it was observed that the best results were attained in cases

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in which surgical treatment of one kind or another was used, irrespective of the role played by radiation. In all instances, operation was resorted to for drainage of the antrum because of the trapped products of tumor necrosis, radiation destruction, or infection. In most cases adequate post-radiation operation resulted in the extirpation of as much tissue as might have been removed if operation had been selected in the first place as the primary therapeutic agent. Yet, because of the initial intensive radiation, necrotic bony walls and sloughing, foul, cavity linings remained after operation. The patients were subject to frequent, often serious, hemorrhages and needed prolonged and expensive nursing care. Since extensive operation is usually done sooner or later, it would seem reasonable to presume that definitive application of radical operation at the outset should be the treatment of choice. This would permit the surgeon to follow the unaltered local spread of the tumor and to specifically determine the areas from which he probably failed to remove all of the growth, as at the cribriform plate, pterygoid muscles, infratemporal region, orbital roof and sphenoid sinus. He could then direct the radiotherapist to these special areas and likewise present him with an open, exposed surface for treatment in place of the previously hidden bone-enclosed cavity. More efficient radiation with minimal complications can thus be administered, cutting down on the degree of morbidity and shortening the treatment period. Patients so treated are more comfortable and the primary combined treatment period is only one and a half to three months, as against six to nine months with primary radiation methods.

USE OF CAUTERY

The use of the cautery as a surgical tool is shunned for two very good reasons. In the first place, the cautery destroys the outlines of the tumor so that the exact extent of the lesion cannot be visualized. Hence the surgeon cannot intelligently perform an operation which will only encompass the lesion itself; nor is he in a position to advise the radiologist as to where, if at all, he failed to completely eradicate the tumor. Cooked tumor tissue and cooked normal tissues look alike. In the limited surgical field in such operations the surgeon is never sure, in advance, as to how much tissue he will have to remove. He may begin with a limited cheek flap and then decide to remove the maxilla. In following the tumor, he may find it necessary to extend the incision below the lower lid of the eye or around both lids to exenterate the orbit. If the tissues have been altered by previous treatment the surgeon cannot determine whether the posterior ethmoidal involvement represents tumor invasion or inflammatory edema, hence cannot decide whether or not the orbit needs be exenterated because of retro-ocular invasion. He has to determine whether the tumor is invading the infratemporal space or the pterygoid muscles, because in the former instance he would remove the malar bone, in the latter, the mandible. He may wish to decide whether or not the exposed surfaces are sufficiently free of tumor to permit the application of a split graft to the denuded area, thus materially improving the result of operation and reducing the period of convalescence. The use of the cautery prevents such evaluation and forces the surgeon to remove a predetermined mass of tissue which may prove to be too little or unnecessarily mutilating. A second contraindication for the use of the cautery is the destruction with secondary sloughing and sequestration of the remaining tissues, which results in an unnecessarily severe and prolonged period of convalescence. For the same reason, the change in tissue structure caused by cautery may mask early recurrences. About the only virtue of cautery is the hemostatic effect, but hemostasis can be more satisfactorily obtained by arterial ligation.

HISTOPATHOLOGIC FACTORS

Successful management of cancer involving the paranasal sinuses and nasal cavity depends upon early detection, histopathologic determinations, the extent of the disease, and the proper application of the indicated procedures. Histopathologic factors will determine the choice of therapy. If the lesion is lymphosarcoma, plasmacytoma, highly undifferentiated carcinoma, or so-called "reserve cell" carcinoma, small doses of x-ray will often result in at least temporary regression of the tumor with a minimum of deformity or complications. Malignant melanoma and osteogenic sarcoma, on the other hand, are strictly surgical problems. In about 99 per cent of cases the lesion is epithelial carcinoma—adenocarcinoma in 9 per cent of cases and epidermoid or squamous carcinoma in 90 per cent. Adenocarcinoma originates in the accessory salivary gland in most instances. Postoperative radiation probably will not be used in cases of adenocarcinoma, first because the lesion is relatively radioresistant and secondly because it is usually encapsulated and can more certainly be completely removed. Epidermoid or squamous carcinoma is infiltrative, and most of the failures in treatment and the greatest controversy as to management are related to lesions of this type. It is for tumors of this classification that primary radical operation (with postoperative radiation if indicated for residual disease) is recommended.

RESULTS OF TREATMENT

Fifty-one patients were treated for cancer of the nasal cavity or paranasal sinuses in the period 1944-50. In eight cases the growth was confined to the nasal cavity. Although the elapsed time is too short for end-result analysis, this presentation reveals the improved immediate results that can be expected from the application of radical operation as the primary procedure in the treatment of these cases.

In 23 of 43 cases of antral cancer the lesion was so advanced that exenteration of the orbit as well as excision of the maxilla was necessary. In one case bilateral excision of the maxilla was carried out, and in three the vertical ramus of the mandible was excised. There were three postoperative deaths, one

caused by cerebral anoxia because of plugging of the endotracheal tube, another by meningitis following removal of the tumor invading the cribriform plate, and a third by coronary thrombosis on the seventh postoperative day. Three patients died of other causes, apparently free of cancer. Seventeen died of cancer after survival of six months to three years postoperatively. Three were alive but had cancer at the time of this report.

Seventeen patients were still alive, free of cancer, six months to four years after treatment. One of the three-year survivors had had primary radiation and two limited surgical procedures in a period of six months before he was first observed by the author. Combined maxillary excision and orbit exenteration then was carried out and, seven months later, a radical dissection for metastatic cervical node cancer. At last report the patient has been gainfully employed and meeting the public without discomfort or disease for two years.

Although 23 of the 43 patients were considered incurable and beyond hope because of the orbital involvement, eight of them were still alive and free of disease after periods ranging from ten months up to almost four years. The author knows of no other combination of treatment which could have been offered these patients with cure as an objective.

Because of tumor invasion of the base of the skull, especially in the region of the cribriform plate, there was leakage of cerebrospinal fluid during operation in four cases. One of the patients died postoperatively, and the other three lived only six to eleven months. In nine cases there was extension of the lesion into the pterygoid muscles. In three of them the vertical ramus of the mandible was removed. Seven of the nine patients had postoperative radiation, and four were still alive without evidence of disease at the time of this report.

Metastasis to regional nodes was observed in only four of the 43 cases of antral cancer. One of the four patients was alive without evidence of recurrence two years and ten months after radical neck dissection. One patient died of distant metastases to the liver and lung following bilateral cervical node involvement.

COSMETIC CONSIDERATIONS

An important consideration, of course, is what effect the disfigurement of operation will have upon the patient in social and business relations. A patient who has had exenteration of the orbit need but wear an ordinary eye-patch to make himself quite presentable, while use of a simple dental prosthesis will overcome a palatal defect so that eating and speech are normal. At the same time, the palatal defect can be looked upon as a distinct advantage in that it permits easy, accurate and frequent observation of the involved area so that early detection of controllable recurrence is possible.

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